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EXAMINER	
MONFELDT, SARAH M	
ART UNIT	PAPER NUMBER
3692	

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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/040,837	GILBERT ET AL.	
	Examiner	Art Unit	
	SARAH M. MONFELDT	3692	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 May 2008*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *13, 45; 31, 2, 9, 12, 25, 27-29, 32, 35-39; 33, 7, 40; 53, 19* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *13, 45; 31, 2, 9, 12, 25, 27-29, 32, 35-39; 33, 7, 40; 53, 19* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION
Status of Claims

1. This action is in reply to the Amendment/Response filed on 1 May 2008.
2. Claims 2, 7, 9, 12, 13, 19, 25, 27-29, 31, 33, 35, 36-40, 45 were amended.
3. Claim 53 was added.
4. Claims 1, 6, 8, 14-18, 30, 34, 41-44, 46-52 were canceled.
5. Claims 13, 45; 31, 2, 9, 12, 25, 27-29, 32, 35-39; 33, 7, 40; 53, 19 are currently pending and have been examined.

Assignment Reminder

6. The original assignment recorded at 013046/0568 is only signed by Joan Kirwin. No signature is found representing Andrew Gilbert for this assignment, i.e. there is no signature representing the co-inventors of both Andrew Gilbert and Glenn Kirwin. Therefore, the original assignment did not convey the entire interest to eSpeed, Inc.

Response to Amendment

7. The amendment to the specification filed 1 May 2008 has not been entered because it does not conform to 37 CFR 1.125(b) and (c) because the statement as to a lack of new matter under 37 CFR 1.125(b) is missing.
8. The objection of Claims 1, 13, 18-19, 41-45 under 37 CFR 1.75(c) as set forth in the 1 November 2007 Office Action has been withdrawn in view of Applicants amendment.
9. The rejection of claims 1, 6, 8, 18, 41-44, 46-52 under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement as set forth in the 1 November 2007 Office Action has been withdrawn in view of Applicants cancellation of the claims.
10. The rejection of claims 1-2, 6-9, 12-13, 18-20, 25, 27-52 under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention as set forth in the 1 November 2007 Office Action has been withdrawn in view of Applicants amendments.
11. The rejection of claims 1-2, 6-9, 12-13, 18-20, 25, 27-52 under 35 U.S.C. 103(a) as being unpatentable over Rickard et al. (WO 98/12659) as set forth in the 1 November 2007 Office Action has been withdrawn in view of Applicants Amendment.

Specification

12. The specification is objected to as failing to provide proper antecedent basis for the claimed subject matter. See 37 CFR 1.75(d)(1) and MPEP § 608.01(o). Correction of the following is required: In particular –

- original claims 4 and 16 do not find antecedent basis in the specification as filed, i.e. "providing crossing market rules further comprising means for comprising requiring adherence to the crossing market rules". Appropriate correction is required.
- original claims 12 and 24 do not find antecedent basis in the specification as filed, i.e. "comprising incentivizing market makers to provide liquidity by rewarding a market maker that controls a majority or a pre-determined minority of the trading with a reduced securities buy price and a increased securities sale price". Appropriate correction is required.
- original claims 6 and 18 do not find antecedent basis in the specification as filed, i.e. "selecting a bid-offer liquidity spread comprising selecting a bid-offer liquidity spread based on the proximity of a midpoint of the selected bid-offer liquidity spread to the price of the order imbalance". Please also note that "midpoint" is only disclosed in paragraph **[0031]** of the applicant as originally filed. Appropriate correction is required.
- original claims 7 and 17 do not find antecedent basis in the specification as filed, i.e. "calculating a crossing price comprising calculating a volume-based weighted average between a midpoint of the selected bid-offer liquidity spread and a last-executed trade". Please also note that "midpoint" is only disclosed in paragraph **[0031]** of the applicant as originally filed. Appropriate correction is required.
- original claims 8 and 19 do not find antecedent basis in the specification as filed, i.e. "the calculating a crossing price comprising calculating a volume-based weighted average between a midpoint of the selected bid-offer liquidity spread and the order imbalance". Please also note that "midpoint" is only disclosed in paragraph **[0031]** of the applicant as originally filed. Appropriate correction is required.

Claim Rejections - 35 USC § 112, first paragraph

13. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

14. Claims 12, 13, 31, 32, 33, 35-36, 38, 53, remain rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

    a. The recitation of "a buy price that is lower than a price at which the matching of the plurality of orders occurs and a sale price that is higher than the price at which the matching of the plurality of orders occurs" at least in claim 12 does not find support in the specification/abstract/drawings/claims as originally filed. Appropriate correction is required.

    b. The recitation of "using liquidity provided by the market maker that provided the first/second bid-offer liquidity spread" at least in claims 13, 31, 33, 38 and 53 does not find support in the specification as originally filed. Appropriate correction is required.

    c. The recitation of "calculating an average between the first crossing price and at least one of a buying price of the first bid-offer liquidity spread and a selling price of the first bid-offer liquidity spread" at least in claim 32 does not find support in the specification/abstract/drawings/claims as originally filed. Appropriate correction is required.

    d. The recitation of "in which the crossing price at which the order imbalance is filled is higher than the first crossing price" at least in claims 35 does not find support in the specification/abstract/drawings/claims as originally filed. Appropriate correction is required.

    e. The recitation of "in which the crossing price at which the order imbalance is filled is lower than the first crossing price" at least in claims 36 does not find support in the specification/abstract/drawings/claims as originally filed. Appropriate correction is required.

Claim Rejections - 35 USC § 101

15. 35 U.S.C. 101 reads as follows:

    Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

16. Claim(s) 31, 2, 9, 12, 25, 27-29, 32, 35-39 and claims 33, 7, 40 is/are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

    A claimed process is eligible for patent protection under 35 U.S.C. § 101 if:

"(1) it is tied to a particular machine or apparatus, or (2) it transforms a particular article into a different state or thing. See Benson, 409 U.S. at 70 ('Transformation and reduction of an article 'to a different state or thing' is the clue to the patentability of a process claim that does not include particular machines.'); Diehr, 450 U.S. at 192 (holding that use of mathematical formula in process 'transforming or reducing an article to a different state or thing' constitutes patent-eligible subject matter); see also Flook, 437 U.S. at 589 n.9 ('An argument can be made [that the Supreme] Court has only recognized a process as within the statutory definition when it either was tied to a particular apparatus or operated to change materials to a 'different state or thing' '); Cochrane v. Deener, 94 U.S. 780, 788 (1876) ('A process is...an act, or a series of acts, performed upon the subject-matter to be transformed and reduced to a different state or thing.').[7] A claimed process involving a fundamental principle that uses a particular machine or apparatus would not pre-empt uses of the principle that do not also use the specified machine or apparatus in the manner claimed. And a claimed process that transforms a particular article to a specified different state or thing by applying a fundamental principle would not pre-empt the use of the principle to transform any other article, to transform the same article but in a manner not covered by the claim, or to do anything other than transform the specified article." (*In re Bilski, 88 USPQ2d 1385, 1391 (Fed. Cir. 2008))*

Also noted in *Bilski* is the statement, "Process claim that recites fundamental principle, and that otherwise fails 'machine-or-transformation' test for whether such claim is drawn to patentable subject matter under 35 U.S.C. §101, is not rendered patent eligible by mere field-of-use limitations; another corollary to machine-or-transformation test is that recitation of specific machine or particular transformation of specific article does not transform unpatentable principle into patentable process if recited machine or transformation constitutes mere 'insignificant post-solution activity.'" (*In re Bilski, 88 USPQ2d 1385, 1385 (Fed. Cir. 2008))* Examples of insignificant post-solution activity include data gathering and outputting. Furthermore, the machine or transformation must impose meaningful limits on the scope of the method claims in order to pass the machine-or-transformation test.

It is also noted that the mere recitation of a machine in the preamble in a manner such that the machine fails to patentably limit the scope of the claim does not make the claim statutory under 35 U.S.C.

§ 101, as seen in the Board of Patent Appeals Informative Opinion *Ex parte Langemyr et al.* (Appeal 2008-1495).

Claims (31, 2, 9, 12, 25, 27-29, 32, 35-39), as recited, are directed toward a method comprising the steps of (receiving, matching, determining, selecting, calculating, filling). As currently written the steps recited in claims 31, 2, 9, 12, 25, 27-29, 32, 35-39 are not tied to a machine, much less a significant tie to a particular machine (i.e. computer/processor/server/etc.).

Claims (33, 7, 40), as recited, are directed toward a method comprising the steps of (receiving, matching, determining, selecting, calculating, filling. As currently written the steps recited in claims 33, 7, 40 are not tied to a machine, much less a significant tie to a particular machine (i.e. computer/processor/server/etc.).

Claim(s) 31, 2, 9, 12, 25, 27-29, 32, 35-39 and claims 33, 7, 40 is/are therefore non-statutory under § 101. Appropriate correction is required.

Claim Rejections - 35 USC § 103

17. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

18. The factual inquiries set forth in Graham v. John Deere Co., 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

19. Claims 31, 2, 9, 12, 25-29, 35-39, Claims 13, 45, Claims 33, 40 and Claim 53 are rejected under 35 U.S.C. 103(a) as being unpatentable over Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817).

> **Examiner's Note**: The Examiner has pointed out particular references contained in the prior art of record within the body of this action for the convenience of the Applicant. Although the specified citations are representative of the teachings in the art and are applied to the specific limitations within the individual claim, other passages and figures may apply. Applicant, in preparing the response, should consider fully the entire reference as potentially teaching all or part of the claimed invention, as well as the context of the passage as taught by the prior art or disclosed by the Examiner.

Claim 31 –

As per claim 31, Rickard et al. (WO 00/26834) disclose *a method* having the limitations of:

- *receiving, in a crossing market, a plurality of bid-offer liquidity spreads from a plurality of market-makers; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*
- *receiving, in the crossing market, a plurality of orders, from a plurality of customers; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*
- *matching at least in part the plurality of orders; (see at least pg. 7, ll. 8-12; pg. 9, ll. 17-26; Fig. 1 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *determining, based on the matching of the orders, an order imbalance;*

Rickard (WO 98/12659) teach *determining, based on the matching of the orders, an order imbalance* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)) and since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659).

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *selecting a bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
- *calculating, based on the selected bid-offer liquidity spread, a first crossing price;*
- *filling the matched orders at the first crossing price;*

Harts et al. teach *selecting a bid-offer liquidity spread from the plurality of bid-offer liquidity spreads; calculating, based on the selected bid-offer liquidity spread, a first crossing price; filling the matched orders at the first crossing price* (see at least pg. 5, ll. 28-30; pg. 6, ll. 25-30; pg. 7, ll. 12-17; pg. 8, ll. 12-14, 28; pg. 9, l. 12; pg. 10, ll. 4-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include sending a market order to the primary market, a market maker, or an order execution facility and determining a transaction

price as taught by Harts et al. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since it relates generally to an equity trading system for matching the interest of buyers and sellers and for price improvement, and more particularly to a method and system for managing working orders to buy or sell a large number of shares of a stock over a trading day, and matching these transactions with market orders for that stock (i.e. crossing) (see at least pg. 1, ll. 5-9 of Harts et al.).

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *calculating, based on the selected bid-offer liquidity spread, a second crossing price; and*
- *filling at least in part the order imbalance at the second crossing price using liquidity provided by the market maker that provided the selected bid-offer liquidity spread.*

Rickard (WO 98/12659) teach *calculating, based on the selected bid-offer liquidity spread, a second crossing price; filling at least in part the order imbalance at the second crossing price using liquidity provided by the market maker that provided the selected bid-offer liquidity spread* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers according to features I-III (see at least pg. 12, ll. 18-30 of Rickard (WO 98/12659)) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 2 –

As per claim 2, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard (WO 00/26834), at least pg. 9, ll. 3-6, further discloses *a method* having the limitations of:

- *in which the crossing market comprises a crossing market for trading a fixed-income security.*

Claim 9 –

As per claim 9, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard (WO 98/12659) further disclose:

- *incentivizing the plurality of market makers to provide liquidity to the crossing- market by causing additional information to be provided to at least one market maker that provides liquidity, in which the additional information comprises at least one of:*
    - *a size of the crossing market,*
    - *an amount of the order imbalance, and*
    - *names of participating market makers.*

Rickard (WO 98/12659) teach *incentivizing the plurality of market makers to provide liquidity to the crossing- market by causing additional information to be provided to at least one market maker that provides liquidity, in which the additional information comprises at least one of a size of the crossing market, an amount of the order imbalance, names of participating market makers* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include providing an incentive to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 12 –

As per claim 12, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard (WO 98/12659) further disclose:

- *incentivizing the plurality of market makers to provide liquidity to the crossing market by providing to at least one market maker that provides liquidity at least one of:*
    - *a buy price that is lower than a price at which the matching of the plurality of orders occurs, and*
    - *a sale price that is higher than the price at which the matching- of the plurality of orders occurs.*

Rickard (WO 98/12659) teach *incentivizing the plurality of market makers to provide liquidity to the crossing market by providing to at least one market maker that provides liquidity at least one of; a buy price that is lower than a price at which the matching of the plurality of orders occurs; a sale price that is higher than the price at which the matching- of the plurality of orders occurs* (see at least pg. 20, ll. 18-24 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include permitting market makers to offset the public order imbalances at prices most favorable to them (i.e. buying low, selling high) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since buying low or selling high for market makers is most favorable to them (see at least pg. 20, ll. 18-24 of Rickard (WO 98/12659)).

Claim 25 –

As per claim 25, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard (WO 98/12659) further disclose:

- *causing crossing market rules that govern trading in the crossing market to be provided to the plurality of market makers, in which the crossing- market rules comprise at least one of:*
    - *first rules for requiring participation in a series of crossing markets, and*
    - *second rules for requiring adherence to the crossing market rules.*

Rickard (WO 98/12659) teach *causing crossing market rules that govern trading in the crossing market to be provided to the plurality of market makers, in which the crossing- market rules comprise at least one of; first rules for requiring participation in a series of crossing markets, second rules for requiring adherence to the crossing market rules* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time

of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 27 –

As per claim 27, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard et al. (WO 00/26834) further disclose:

- *in which the plurality of orders comprise a plurality of buy orders and a plurality of sell orders; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 9, ll. 17-20; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which the order imbalance comprises one of:*
    - *a portion of the plurality of buy orders, and*
    - *a portion of the plurality of sell orders.*

Rickard (WO 98/12659) teach *in which the order imbalance comprises one of; a portion of the plurality of buy orders; a portion of the plurality of sell orders* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll.

24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 28 –

As per claim 28, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard (WO 98/12659) further disclose:

- *in which at least one of the plurality of market makers comprises at least one of:*
    - *a dealer, and*
    - *a trader.*

Rickard (WO 98/12659) teach *in which at least one of the plurality of market makers comprises at least one of, a dealer, a trader* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 3-11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 29 –

As per claim 29, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard (WO 98/12659) further disclose:

- *in which the liquidity provided by the market maker comprises at least one of:*
    - *volume provided by the market maker; and*

- *volume provided by at least one customer of the market maker.*

Rickard (WO 98/12659) teach *in which the liquidity provided by the market maker comprises at least one of, volume provided by the market maker, volume provided by at least one customer of the market maker* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 3-11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 35 –

As per claim 35, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard et al. (WO 00/26834) further disclose:

- *in which the plurality of orders comprises a plurality of buy orders and a plurality of sell orders; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 9, ll. 17-20; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which the order imbalance comprises a portion of the plurality of buy orders; and*

Rickard (WO 98/12659) teach *in which the order imbalance comprises a portion of the plurality of buy orders* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834)

to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which the second crossing price at which the order imbalance is filled is higher than the first crossing price*

Rickard (WO 98/12659) teach *in which the second crossing price at which the order imbalance is filled is higher than the first crossing price* (see at least pg. 10, ll. 2-15; pg. 20, ll. 32-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include less favorable prices to the market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)).

Claim 36 –

As per claim 36, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard et al. (WO 00/26834) further disclose:

- *in which the plurality of orders comprises a plurality of buy orders and a plurality of sell orders; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 9, ll. 17-20; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which the order imbalance comprises a portion of the plurality of sell orders;*

Rickard (WO 98/12659) teach *in which the order imbalance comprises a portion of the plurality of sell orders* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which the crossing price at which the order imbalance is filled is lower than the first crossing price.*

Rickard (WO 98/12659) teach *in which the crossing price at which the order imbalance is filled is lower than the first crossing price* (see at least pg. 10, ll. 2-15; pg. 20, ll. 32-34). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include less favorable prices to the market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)).

Claim 37 –

As per claim 37, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above. Rickard et al. (WO 00/26834) further disclose:

- *in which the selected bid-offer liquidity spread comprises a first bid-offer liquidity spread; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which filling at least in part the order imbalance comprises filling a first portion of the order imbalance at the second crossing price;*

Rickard (WO 98/12659) teach *in which filling at least in part the order imbalance comprises filling a first portion of the order imbalance at the second crossing price* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers according to features I-III (see at least pg. 12, ll. 18-30 of Rickard (WO 98/12659)) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *the method further comprising, after filling the first portion of the order imbalance:*
- *selecting a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
- *calculating, based on the second bid-offer liquidity spread, a third crossing price; and*
- *filling at least a second portion of the order imbalance at the third crossing price.*

Harts et al. teach *the method further comprising, after filling the first portion of the order imbalance; selecting a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads; calculating, based on the second bid-offer liquidity spread, a third crossing price; filling at least a second portion of the*

order imbalance at the third crossing price (see at least pg. 5, ll. 28-30; pg. 6, ll. 25-30; pg. 7, ll. 12-17; pg. 8, ll. 12-14, 28; pg. 9, l. 12; pg. 10, ll. 4-22; pg. 11, ll. 8-17). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include sending a market order to the primary market, a market maker, or an order execution facility and determining a transaction price and dividing the trading day into 13 half hours incrementsas taught by Harts et al. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since it relates generally to an equity trading system for matching the interest of buyers and sellers and for price improvement, and more particularly to a method and system for managing working orders to buy or sell a large number of shares of a stock over a trading day, and matching these transactions with market orders for that stock (i.e. crossing) (see at least pg. 1, ll. 5-9 of Harts et al.).

Claim 38 –

As per claim 38, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 37 as described above. Rickard (WO 98/12659) further disclose:

- *in which filling the second portion of the order imbalance at the third crossing price comprises filling the second portion of the order imbalance at the third crossing process using liquidity provided by the market maker that provided the second bid-offer liquidity spread.*

Rickard (WO 98/12659) teach *in which filling the second portion of the order imbalance at the third crossing price comprises filling the second portion of the order imbalance at the third crossing process using liquidity provided by the market maker that provided the second bid-offer liquidity spread* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)) and since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659).

Claim 39 –

As per claim 37, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 31 as described above.

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which filling at least in part the order imbalance comprises filling a portion of the order imbalance at the second crossing price;*

Rickard (WO 98/12659) teach *in which filling at least in part the order imbalance comprises filling a portion of the order imbalance at the second crossing price* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers according to features I-III (see at least pg. 12, ll. 18-30 of Rickard (WO 98/12659)) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *the method further comprising:*
- *calculating at least one additional crossing price; and*
- *filling a remaining portion of the order imbalance at least one additional crossing price using liquidity provided by the at least one of the plurality of market makers.*

Harts et al. teach *the method further comprising, calculating at least one additional crossing price, filling a remaining portion of the order imbalance at least one additional crossing price using liquidity provided by the at least one of the plurality of market makers* (see at least pg. 5, ll. 28-30; pg. 6, ll. 25-30; pg. 7, ll. 12-17; pg. 8, ll. 12-14, 28; pg. 9, l. 12; pg. 10, ll. 4-22; pg. 11, ll. 8-17). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include sending a market order to the primary market, a market maker, or an order execution facility

and determining a transaction price and dividing the trading day into 13 half hours incrementsas taught by Harts et al. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since it relates generally to an equity trading system for matching the interest of buyers and sellers and for price improvement, and more particularly to a method and system for managing working orders to buy or sell a large number of shares of a stock over a trading day, and matching these transactions with market orders for that stock (i.e. crossing) (see at least pg. 1, ll. 5-9 of Harts et al.).

Claim 13 –

As per claim 13, *Rickard et al. (WO 00/26834)* disclose *an apparatus* having the limitations of:

- *computing device operable to:*
    - *receive, in a crossing market, a plurality of bid-offer liquidity spreads from a plurality of market-makers; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*
    - *receiving, in the crossing market, a plurality of orders from a plurality of customers; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*
    - *match at least in part the plurality of orders; (see at least pg. 7, ll. 8-12; pg. 9, ll. 17-26; Fig. 1 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *determine, based on the matching of the orders, an order imbalance;*

Rickard (WO 98/12659) teach *determine, based on the matching of the orders, an order imbalance* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the apparatus of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the apparatus of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)) and since there is a need for a apparatus of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659).

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *select a bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
- *calculate, based on the selected bid-offer liquidity spread, a first crossing price;*
- *fill the matched orders at the first crossing price;*

Harts et al. teach *select a bid-offer liquidity spread from the plurality of bid-offer liquidity spreads; calculate, based on the selected bid-offer liquidity spread, a first crossing price; fill the matched orders at the first crossing price* (see at least pg. 5, ll. 28-30; pg. 6, ll. 25-30; pg. 7, ll. 12-17; pg. 8, ll. 12-14, 28; pg. 9, l. 12; pg. 10, ll. 4-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the apparatus of Rickard et al. (WO 00/26834) to include sending a market order to the primary market, a market maker, or an order execution facility and determining a transaction price as taught by Harts et al. One of ordinary skill in the art at the time of the invention would have been motivated to expand the apparatus of Rickard et al. (WO 00/26834) in this way since it relates generally to an equity trading system for matching the interest of buyers and sellers and for price improvement, and more particularly to a apparatus and system for managing working orders to buy or sell a large number of shares of a stock over a trading day, and matching these transactions with market orders for that stock (i.e. crossing) (see at least pg. 1, ll. 5-9 of Harts et al.).

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *calculate, based on the selected bid-offer spread, a second crossing price; and*
- *fill at least in part the order imbalance at the second crossing price using liquidity provided by the market maker that provided the selected bid offer liquidity spread.*

Rickard (WO 98/12659) teach *calculate, based on the selected bid-offer liquidity spread, a second crossing price; fill at least in part the order imbalance at the second crossing price using liquidity provided by the market maker that provided the selected bid-offer liquidity spread* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers according to features I-III (see at least pg. 12, ll. 18-30 of Rickard (WO 98/12659)) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening,

which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 45 –

As per claim 45, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the apparatus of claim 13 as described above. Rickard (WO 00/26834) further disclose:

- *in which the selected bid-offer liquidity spread comprises a first bid-offer liquidity spread; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which to fill at least in part the order imbalance comprises to fill a first portion of the order imbalance at the second crossing price; and*

Rickard (WO 98/12659) teach *in which to fill at least in part the order imbalance comprises to fill a first portion of the order imbalance at the second crossing price* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the apparatus of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers according to features I-III (see at least pg. 12, ll. 18-30 of Rickard (WO 98/12659)) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the apparatus of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a apparatus of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *in which the computing device is further operable to:*
- *after filling the first portion of the order imbalance;*
- *select a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads,*
- *calculate, based on the second bid-offer liquidity spread, a third crossing price, and*
- *fill at least a second portion of the order imbalance at the third crossing price.*

Harts et al. teach *in which the computing device is further operable to after filling the first portion of the order imbalance; select a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads; calculate, based on the second bid-offer liquidity spread, a third crossing price; fill at least a second portion of the order imbalance at the third crossing price* (see at least pg. 5, ll. 28-30; pg. 6, ll. 25-30; pg. 7, ll. 12-17; pg. 8, ll. 12-14, 28; pg. 9, l. 12; pg. 10, ll. 4-22; pg. 11, ll. 8-17). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the apparatus of Rickard et al. (WO 00/26834) to include sending a market order to the primary market, a market maker, or an order execution facility and determining a transaction price and dividing the trading day into 13 half hours increments as taught by Harts et al. One of ordinary skill in the art at the time of the invention would have been motivated to expand the apparatus of Rickard et al. (WO 00/26834) in this way since it relates generally to an equity trading system for matching the interest of buyers and sellers and for price improvement, and more particularly to a apparatus and system for managing working orders to buy or sell a large number of shares of a stock over a trading day, and matching these transactions with market orders for that stock (i.e. crossing) (see at least pg. 1, ll. 5-9 of Harts et al.).

Claim 33 –

As per claim 33, *Rickard et al. (WO 00/26834)* disclose *a method* having the limitations of:

- *receiving, in a crossing market, a plurality of bid-offer liquidity spreads from a plurality of market-markers; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*
- *receiving, in the crossing market, a plurality of orders from a plurality of customers; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*
- *matching at least in part the plurality of orders; (see at least pg. 7, ll. 8-12; pg. 9, ll. 17-26; Fig. 1 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *determining, based on the matching of the orders, an order imbalance;*

Rickard (WO 98/12659) teach *determining, based on the matching of the orders, an order imbalance* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)) and since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659).

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *selecting a first bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
- *calculating, based on the first bid offer liquidity spread, a first crossing price;*
- *filling the matched orders at the first crossing price;*

Harts et al. teach *selecting a first bid-offer liquidity spread from the plurality of bid-offer liquidity spreads; calculating, based on the first bid offer liquidity spread, a first crossing price; filling the matched orders at the first crossing price* (see at least pg. 5, ll. 28-30; pg. 6, ll. 25-30; pg. 7, ll. 12-17; pg. 8, ll. 12-14, 28; pg. 9, l. 12; pg. 10, ll. 4-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include sending a market order to the primary market, a market maker, or an order execution facility and determining a transaction price as taught by Harts et al. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since it relates generally to an equity trading system for matching the interest of buyers and sellers and for price improvement, and more particularly to a method and system for managing working orders to buy or sell a large number of shares of a stock over a trading day, and matching these transactions with market orders for that stock (i.e. crossing) (see at least pg. 1, ll. 5-9 of Harts et al.).

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *selecting a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
- *calculating, based on the second bid-offer liquidity spread, a second crossing price; and*
- *filling at least in part the order imbalance at the second crossing price using liquidity provided by the market maker that provided the second bid-offer liquidity spread.*

Rickard (WO 98/12659) teach *selecting a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads, calculating, based on the second bid-offer liquidity spread, a second crossing price; filling at least in part the order imbalance at the second crossing price using liquidity provided by the market maker that provided the selected bid-offer liquidity spread* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers according to features I-III (see at least pg. 12, ll. 18-30 of Rickard (WO 98/12659)) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 40 –

As per claim 40, Rickard et al. (WO 00/26834) in view of Rickard (WO 98/12659) and Harts et al. (WO 01/04817) teach the method of claim 30 as described above. Rickard (WO 98/12659) further disclose:

- *in which calculating the second crossing price comprises calculating the second crossing price based on the second bid-offer liquidity spread and at a last-executed trade price, in which the last-executed trade price is calculated based on bid-offer liquidity spread other than the first and the second bid-offer liquidity spreads.*

Rickard (WO 98/12659) teach *in which calculating the second crossing price comprises calculating the second crossing price based on the second bid-offer liquidity spread and at a last-executed trade price, in which the last-executed trade price is calculated based on bid-offer liquidity spread other than the first and the second bid-offer liquidity spreads* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12; pg. 22, ll. 14-32 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public

orders to market makers according to features I-III (see at least pg. 12, ll. 18-30 of Rickard (WO 98/12659)) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Claim 53 –

As per claim 13, *Rickard et al. (WO 00/26834)* disclose *an apparatus* having the limitations of:

- *a computing device operable to:*
    - *receive, in a crossing market, a plurality of bid-offer liquidity spreads from a plurality of market-makers; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*
    - *receive, in the crossing market, a plurality of orders from a plurality of customers; (see at least pg. 5, ll. 10-17; pg. 7, ll. 8-12; pg. 10, ll. 3-26; pg. 12, ll. 8-16; pg. 13, ll. 25-27 of Rickard et al. (WO 00/26834))*
    - *match at least in part the plurality of orders; (see at least pg. 7, ll. 8-12; pg. 9, ll. 17-26; Fig. 1 of Rickard et al. (WO 00/26834))*

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *determine, based on the matching of the orders, an order imbalance;*

Rickard (WO 98/12659) teach *determine, based on the matching of the orders, an order imbalance* (see at least pg. 2, ll. 9-20; pg. 8, l. 35 through pg. 9, l. 11; pg. 9, ll. 23-26; pg. 11, ll. 14-29; pg. 12, ll. 3-4, 14-35; pg. 13, ll. 1-17, 23-28 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO

98/12659)) and since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659).

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *select a first bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
- *calculate, based on the first bid-offer liquidity spread, a first crossing price;*
- *fill the matched orders at the first crossing price;*

Harts et al. teach *select a first bid-offer liquidity spread from the plurality of bid-offer liquidity spreads; calculate, based on the first bid-offer liquidity spread, a first crossing price; fill the matched orders at the first crossing price* (see at least pg. 5, ll. 28-30; pg. 6, ll. 25-30; pg. 7, ll. 12-17; pg. 8, ll. 12-14, 28; pg. 9, l. 12; pg. 10, ll. 4-22). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include sending a market order to the primary market, a market maker, or an order execution facility and determining a transaction price as taught by Harts et al. One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since it relates generally to an equity trading system for matching the interest of buyers and sellers and for price improvement, and more particularly to a method and system for managing working orders to buy or sell a large number of shares of a stock over a trading day, and matching these transactions with market orders for that stock (i.e. crossing) (see at least pg. 1, ll. 5-9 of Harts et al.).

Rickard et al. (WO 00/26834) do not explicitly disclose:

- *select a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads;*
- *calculate, based on the second bid-offer liquidity spread, a second crossing price; and*
- *fill at least in part the order imbalance at the second crossing price using liquidity provided by the market maker that provided the second bid-offer liquidity spread.*

Rickard (WO 98/12659) teach *select a second bid-offer liquidity spread from the plurality of bid-offer liquidity spreads; calculate, based on the second bid-offer liquidity spread, a second crossing price; fill at least in part the order imbalance at the second crossing price using liquidity provided by the market maker that provided the second bid-offer liquidity spread* (see at least pg. 12, ll. 14-30; pg. 13, ll. 4-17; pg. 14, ll. 23-35; pg. 15, ll. 1-11, 20-23; pg. 17, ll. 16-35; pg. 21, ll. 1-3, 9-12 of Rickard (WO 98/12659)). It would have been obvious to one of ordinary skill in the art at the time of the invention to expand the method of Rickard et al. (WO 00/26834) to include determining and allocating residual imbalance in public orders to market makers according to features I-III (see at least pg. 12, ll. 18-30 of Rickard (WO

98/12659)) as taught by Rickard (WO 98/12659). One of ordinary skill in the art at the time of the invention would have been motivated to expand the method of Rickard et al. (WO 00/26834) in this way since market makers as a group have an obligation to satisfy the residual imbalance in public orders (see at least pg. 10, ll. 30-32 of Rickard (WO 98/12659)), since there is a need for a method of allocation of residual public order imbalances amongst market makers at the opening that optimizes each market maker's position with respect to his or her desired position (see at least pg. 11, ll. 24-29 of Rickard (WO 98/12659), and since the first feature (I) avoids gross inconsistencies in implied volatility at the opening, which still allowing some latitude for variations in market demand, the second feature (II) meets the general purpose of an option exchange, i.e. to maximize the mutual satisfaction among all participants to the greatest degree possible, and feature three (III) provides an improvement over current methods for the assignment of market maker to the required position in the opening.

Allowable Subject Matter

20. Claim 7 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 101 and the objection to the specification as set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
21. Claim 19 would be allowable if rewritten to overcome the objection to the specification as set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.
22. Claim 32 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 101 and the rejection(s) under 35 U.S.C. 112, first paragraph as set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

Response to Arguments

23. Applicant's arguments with respect to claims 13, 45; 31, 2, 9, 12, 25, 27-29, 32, 35-39; 33, 7, 40; 53, 19 have been considered but are moot in view of the new ground(s) of rejection.

24. Applicants arguments with respect to the 112, first paragraph rejection set forth in the 1 November 2007 Office Action with respect to Applicants reference to specific paragraphs within the Specification as filed for "a buy price that is lower…", "using liquidity provided…", "calculating an average between the first crossing price and at least one of a buying price of the first bid-offer liquidity spread and a selling price of the first bid-offer liquidity spread", "in which the crossing price is filled is higher/lower than the first crossing price" is not persuasive. As set forth in the previous Office Action the terms recited in the claims do not find support in the specification as originally filed and it is therefore not clear what the recited claim language is attempting to encompass.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SARAH M. MONFELDT whose telephone number is (571)270-1833. The examiner can normally be reached on Monday-Friday 7:30am-5:00pm (EST) ALT Fridays off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kambiz Abdi can be reached on (571)272-6702. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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